INSTRUCTION MANUAL

MODEL 8700

CABLE AND PIPE LOCATOR

SAFETY

THE TEST OPERATOR MUST FOLLOW ALL ACCEPTED SAFETY PRACTICES, PROCEED WITH CAUTION, AND DO ALL IN HIS POWER TO ASSURE A SAFE TEST.

BECAUSE OF THE INHERENT DANGERS IN ANY HIGH VOLTAGE WORK, SPECIAL CARE MUST BE TAKEN TO SAFEGUARD PERSONNEL DURING ANY TESTING OR FAULT FINDING.

GENERAL

REGARDLESS OF THE TYPE TEST TO BE MADE OR FAULT TO BE FOUND, CERTAIN PRELIMINARY STEPS SHOULD PRECEDE THE ACTUAL TEST. FIRST, OPEN ALL SWITCHES AND BREAKERS TO DE-ENERGIZE THE CABLE OR EQUIPMENT AND ISOLATE THE ITEM. USING A HOT STICK AND RUBBER GLOVES, GROUND ALL SECTIONS OF THE TEST ITEM TO INSURE THAT IT IS NOT CHARGED.

CAREFUL ADVANCE PLANNING IS ESSENTIAL TO A PROPER AND SAFE TEST. PROPER TEST EQUIPMENT, GROUND LEADS, HIGH VOLTAGE CABLES, HOT STICK, RUBBER GLOVES AND ANY OTHER SPECIAL TOOLS SHOULD BE ASSEMBLED AT THE TEST SITE.

THE EQUIPMENT TO BE TESTED SHOULD BE DE-ENERGIZED, *PROPERLY GROUNDED AND DISCONNECTED. CABLES TO BE TESTED SHOULD BE DE-ENERGIZED, *PROPERLY GROUNDED, AND ISOLATED FROM OTHER COMPONENTS SUCH AS SWITCH GEAR, TRANSFORMERS, LIGHTNING ARRESTORS, ETC. BOTH ENDS OF A CABLE TO BE TESTED SHOULD BE DISCONNECTED AND PROTECTED TO SAFEGUARD PASSING PERSONNEL. THE CONDUCTORS AT THE FAR END OF A CABLE SHOULD BE SEPARATED AND TAPED TO AVOID EXTERNAL FLASH OVER OR LEAKAGE DURING THE TEST.

A MAN SHOULD BE STATIONED AT ANY POINT WHERE THE TEST ITEM IS ACCESSIBLE TO UNAUTHORIZED PEOPLE AND BARRIERS SHOULD BE ERECTED. SIGNS SHOULD BE POSTED THAT READ "DANGER - HIGH VOLTAGE TEST IN PROGRESS, KEEP AWAY." DO NOT USE TERMS SUCH AS "KILOVOLTS," "KV" OR "HV" BECAUSE THE AVERAGE PERSON DOES NOT UNDERSTAND THE TRUE MEANING OF THESE TERMS OR ABBREVIATIONS.

DECIDE UPON THE PROPER TEST PROCEDURE TO BE FOLLOWED BEFORE STARTING THE TEST.

HIGH VOLTAGE TESTING

AFTER MAKING ANY TEST TURN THE HIGH VOLTAGE SWITCH OFF AND RETURN THE VOLTAGE CONTROL TO ZERO OR MINIMUM POSITION, CHECK THE KILOVOLTMETER FOR A ZERO INDICATION (ON DC TEST THE CAPACITIVE ELEMENT OF THE TEST ITEM WILL HOLD A CHARGE AND MAY TAKE A LONG TIME TO DISCHARGE) AND *GROUND THE TEST ITEM BEFORE DISCONNECTION. AFTER A DC TEST HAS BEEN PERFORMED THE GROUND SHOULD BE LEFT ON THE ITEM FOR AT LEAST AS LONG AS THE TOTAL TIME HIGH VOLTAGE WAS APPLIED TO PREVENT A VOLTAGE BUILD UP DUE TO ABSORPTION CURRENTS. IT IS BEST TO LEAVE A GROUND ON A TEST ITEM ANY TIME IT IS NOT IN SERVICE OR UNDERGOING A TEST.

*ANY TIME A GROUND IS TO BE PLACED ON A CIRCUIT IT SHOULD FIRST BE GROUNDED WITH A HOT STICK AND RUBBER GLOVES. ALL CIRCUITS NOT IN USE (OR CONNECTED TO A GUARD OR BYPASS CIRCUIT) SHOULD BE GROUNDED.

FAULT FINDING

MAKE AN INSULATION RESISTANCE TEST ON THE FAULTED CABLE BETWEEN THE CONDUCTOR AND GROUND, SHIELD OR HOUSING BEFORE TESTING ON BOTH ENDS OF A CABLE TO DETERMINE THE CONDITION OF THE FAULT. CONSIDER ALL THE FACTORS EFFECTING THE FAULTED CABLE, SUCH AS THE RESISTANCE OF THE FAULT, THE AGE OF THE CABLE, THE CONDITION OF THE GROUND (IF BURIED), THE HUMIDITY, THE VOLTAGE RATING OF THE CABLE, ETC. AND DECIDE ON THE BEST TEST METHOD OR METHODS TO BE USED.

BECAUSE OF THE HEAVY PULSE CURRENT (POSSIBLY THOUSANDS OF AMPERES) GENERATED WITH CAPACITANCE DISCHARGE EQUIPMENT, IT IS ABSOLUTELY ESSENTIAL THAT CAREFUL ATTENTION BE PAID TO PROPER GROUNDING AND SAFETY PRACTICES. THE TEST EQUIPMENT SHOULD BE TIED TO A GOOD EARTH GROUND WITH AS SHORT AND HEAVY A CONNECTION AS POSSIBLE. THE UNUSED PHASES OF A MULTI-PHASE CABLE AND THE SHEATH OR NEUTRAL SHOULD ALSO BE TIED TO THIS SAME GROUND.

EQUIPMENT GROUNDING INSTRUCTIONS

IT IS ABSOLUTELY ESSENTIAL FOR SAFETY OF OPERATING PERSONNEL AS WELL AS FOR PROPER OPERATION OF THE TEST EQUIPMENT, THAT THE EQUIPMENT BE EFFECTIVELY GROUNDED. EFFECTIVELY GROUNDED, AS DEFINED IN THE NATIONAL ELECTRICAL CODE, MEANS "..... CONNECTED TO EARTH THROUGH A GROUND CONNECTION OF SUFFICIENTLY LOW IMPEDANCE AND HAVING SUFFICIENT AMPACITY TO PREVENT THE BUILDING UP OF VOLTAGE WHICH MAY RESULT IN UNDUE HAZARD TO CONNECTED EQUIPMENT OR TO PERSONS."

DEPENDING ON THE POWER INPUT REQUIREMENTS, SOME INSTRUMENTS MAY BE EQUIPPED WITH A POWER INPUT CABLE HAVING A THREE-PRONG GROUNDING TYPE PLUG, A TWO-PRONG PLUG WITH GROUNDING CLIP, OR A THREE CONDUCTOR CABLE TERMINATING IN LUGS (WHERE ONE LUG IS FOR GROUND CONNECTION). IN ANY CASE AN EFFECTIVE GROUND CONNECTION MUST BE PROVIDED.

WHERE A THREE-PRONG GROUNDING TYPE PLUG IS USED, THE EQUIPMENT WILL BE GROUNDED THROUGH THE GROUND PRONG PROVIDED THAT THE RECEPTACLE ITSELF IS EFFECTIVELY GROUNDED THROUGH A LOW IMPEDANCE GROUND CONNECTION.

ON INSTRUMENTS EQUIPPED WITH A TWO-PRONG PLUG AND GROUNDING CLIP, A THREE CONDUCTOR LINE CORD TERMINATED IN LUGS, OR WHERE A TWO-PRONG ADAPTER IS USED ON A THREE-PRONG PLUG, THE GROUNDING CLIP OR LEAD MUST BE CONNECTED TO A LOW IMPEDANCE EARTH GROUND. FOR A LOW IMPEDANCE EARTH GROUND, A CONTINUOUS METALLIC UNDERGROUND WATER SYSTEM MAY BE USED FOR GROUND CONNECTION. WHERE THIS IS NOT AVAILABLE A DRIVEN GROUND ROD MAY BE USED TO PROVIDE AN EFFECTIVE EARTH GROUND. IN EITHER CASE THE RESISTANCE TO GROUND OF THE PIPING SYSTEM OR DRIVEN GROUND ROD SHOULD NOT EXCEED 25 OHMS AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.

SOME INSTRUMENTS ARE EQUIPPED WITH A SAFETY GROUND TERMINAL IN ADDITION TO THE GROUNDING CONDUCTOR IN THE LINE CORD. THIS TERMINAL SHOULD BE CONNECTED TO AN AUXILIARY GROUNDING ELECTRODE, HAVING LOW IMPEDANCE, SUCH AS A PIPING SYSTEM OR DRIVEN GROUND REFERRED TO ABOVE. THIS TERMINAL SHOULD BE CONNECTED TO GROUND WITH HEAVY WIRE.

IF TEST EQUIPMENT IS BEING USED IN THE FIELD WHERE INPUT POWER IS PROVIDED BY A GASOLINE ENGINE DRIVEN ALTERNATOR, GENERATOR, OR A BATTERY OPERATED CONVERTER, IT IS ESSENTIAL THAT NOT ONLY THE TEST EQUIPMENT BUT ALSO THE METALLIC FRAMEWORK OR HOUSING OF THE POWER SOURCE BE GROUNDED.

FAILURE TO COMPLY WITH THE ABOVE EQUIPMENT GROUNDING INSTRUCTIONS COULD RESULT IN DANGEROUS ELECTRICAL SHOCK TO OPERATING PERSONNEL.

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SPECIFICATIONS

MODEL:	8700 CABLE AND PIPE LOCATOR
CASE:	19" x 12¼" x 6½" aluminum suitcase style case housing Transmitter, Detector and accessories.
TRANSMITTER	
OUTPUT:	7 watts (W/12 V. Input) pulse modulated tone signal.
INPUT VOLTS:	9 to 15 volts DC.
BATTERY:	Two 12 volts batteries connected in parallel (Burgess TW2 or equivalent).
AUX. BATTERY:	15 foot cables are provides for connecting to 12 V. auto batte
TERMINATION:	Two battery terminals. Two output terminals.
DETECTOR	
INPUT:	9 volts DC self-contained battery (Eveready 216 or equivalent)
CONTROLS:	VOLUME, PEAK-NULL- 45° switch and 60 Hz-TONE switch.
CASE:	3-11/16" x 6½" x 2-3/8" with belt clip.
TERMINATION:	Probe receptacle for quick disconnect connector and phone jack
ACCESSORIES	
PROBE:	1½" x 1½" x 10½" search coil mounted to 31-3/4" two section handle. Terminated in quick disconnect connector. This singl probe provides peak, null and 45° modes of operation.
EARPHONES:	Dual headphones with foam ear cushions and an adjustable head-band.
GROUND SPIKE:	16-3/4" long steel spike, copper clad, with "T" handle.
CABLE:	One set of 15 foot cables terminated in insulated clips and spade lugs for connections to test cable and to auxillary battery.
CARRYING CASE:	8" x 3-3/4" x 3½" leatherette cayrying case for detector.
WEIGHTS	

TRANSMITTER (W/BATTERIES)	14¼ lbs.
DETECTOR W/CASE	1-1/8 lbs.
HEADPHONES	3/4 lbs
PROBE	2¼ lbs.
GROUND SPIKE	3/4 lbs.
CABLES	2-1/8 lbs.
TOTAL UNIT	21¼ lbs.

TRANSMITTER

INPUT

The unit operates from a 12 volt DC source. Terminals are provided to connect the battery harness or external cables.

If the batteries in the unit need to be replaced, but new batteries are not available, an auto battery may be used. Disconnect the batteries in the unit and connect the terminals to the auto battery with the cables provided, noting polarity.

OUTPUT

The transmitter is turned ON and OFF by the toggle switch on the panel.

The output from the transmitter is pulse modulated and provides a strong signal to be applied to the item to be traced.

BATTERY

If the battery voltage drops too low, the pulse modulation will stop, and the battery should be replaced.

BATTERY REPLACEMENT

To replace the batteries, disconnect the leads from the batteries and lift out. Replace the batteries as required, or at least once a year.

DETECTOR

The detector is powered by a self-contained battery and uses an integrated circuit power amplifier with transistorized pre-amplifier. The input incorporates a unique switching system to provide PEAK-NULL-45° modes of operation. The output is fed to a pair of headphones, which have cushioned ear pieces to help block outside noise. A VOLUME control is provided to adjust the sensitivity of the amplifier.

An input filter is also incorporated to filter out 60 Hz when the transmitter is being used, which reduces the effects of overhead lines and other energized cable in the area.

The PROBE receptacle is keyed to assure proper alignment of the pins, and a push-to-release lock is on the probe connector. When the probe is connected, the detector is automatically turned ON.

BATTERY REPLACEMENT

As the battery voltage decreases, the sensitivity will decrease. The battery should be replaced as required, or at least once a year.

Remove the four screws on the rear of the detector, remove the rear cover, and replace the battery.

PROBE

Because of a unique design, a single probe can be used for PEAK, NULL and 45° modes of operation. The operator needs only to turn a switch to change modes.

PEAK MODE

The PEAK MODE is used to trace the path of the cable under test by giving a maximum audio signal when the probe head is crosswise and centered (note arrow on probe) on the cable. As the probe is moved to either side of the cable (at right angles to the cable) the audio signal will decrease.

In case of an outright break or complete open circuit in the cable, the audio oscillator may be used for fault finding, as well as cable locating, since the signal will either disappear completely or decrease after the break has been passed.

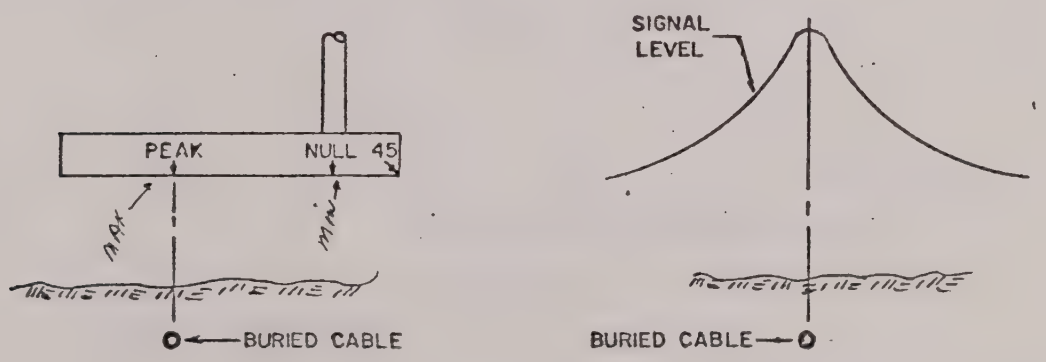


FIG. 1

NULL MODE

The NULL MODE is used to trace the cable under test by giving a null (minimum audio signal) in the audio signal when the probe handle (note arrow) is directly over the cable under test. As the probe is moved from one side of the cable to the other, the audio signal will increase, see Figure 2. The probe must always be held in a vertical position.

The NULL MODE can be used to locate opens in the cable by tracing the cable's path to the open. At this point the null will broaden and become unidentifiable.

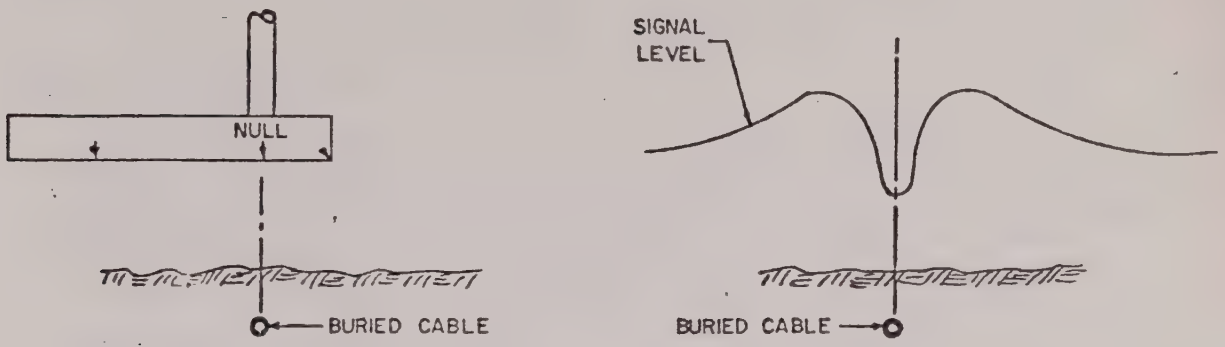


FIG. 2

45° MODE

To determine the approximate depth of a cable, a combination of the NULL and 45° modes is used. The cable location is first pinpointed by using the NULL MODE and marked. Then in the 45° MODE the probe is moved away from the null point (at right angles to the cable), with the head of the probe pointing away from the cable (see Figure 3) until a null is noted in the signal. The distance from the first null to the second null is the approximate depth.

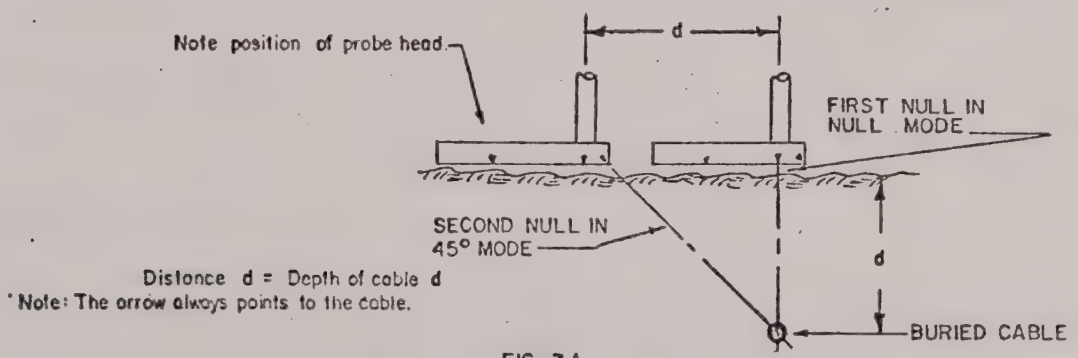

Note position of probe head
d
FIRST NULL IN NULL MODE
SECOND NULL IN 45° MODE
d
Distance d = Depth of cable d
Note: The arrow always points to the cable.
BURIED CABLE

FIG. 3A

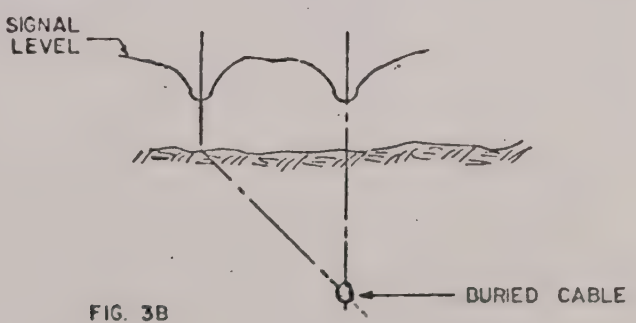


FIG. 3B

SPECIAL TEST CONDITIONS AND CONSIDERATIONS

The conditions described in this section are given only as aids to using the instrument and not necessarily as exact testing methods.

OPENS (NO SHORT TO GROUND)

An open can be found by using the audio signal. The audio signal is coupled through the capacitance of the cable to ground. The OUTPUT terminal must be connected to the current carrying conductor insulated from ground. When the PEAK MODE is used, the cable path is traced following the maximum signal. When the open is passed, the signal will decrease noticeably and normally the maximum signal will broaden.

When the NULL MODE is used, the cable path is traced by noting the null in the audio signal. As the open is passed, the null will broaden and become unidentifiable.

Oftentimes the PEAK MODE is used to find the general area of the open, and then the NULL MODE is used to narrow that area.

LOCATING UNSHIELDED DIRECT BURIED CABLE

When locating a cable that does not have a fault, the audio level can be increased by grounding the cable at the end opposite the transmitter.

LOCATING CABLE IN STEEL CONDUIT

Use the same set-up as described under LOCATING PIPE, except connect the OUTPUT terminal to the conduit.

LOCATING ENERGIZED CABLE IN PLASTIC DUCT

Connections should be made the same as described under LOCATING ENERGIZED CABLES.

TRACING SYSTEM GROUND

When locating cables where the OUTPUT is connected to system ground and there are other cables terminating at that same point, the distance the cable can be traced may be reduced because of the extreme load that is placed on the transmitter due to the many return paths. This condition can sometimes be reduced by connecting to the other end of the cable.

LOCATING ENERGIZED CABLE USING TONE SIGNAL

1. Turn the transmitter switch OFF.

2. Connect one OUTPUT terminal to the shield of the cable and the other terminal to a spike driven into the ground twenty to thirty feet to one side of the cable to be located (using the output cables provided). Turn the transmitter ON.

3. Rotate the detector VOLUME control to its full counter-clockwise position.

4. Plug the headphones into the PHONES jack on the detector.

5. Screw the two section probe handle together and insert the connector into the PROBE receptacle (note keyway) until it locks in place. This automatically turns the detector ON.

6. Rotate the PEAK-NULL-45° switch to the desired position.

7. Place the toggle switch in the TONE position.

8. Adjust the VOLUME control and slowly wave the probe back and forth a few inches above the ground to trace the cable's path.

   The PEAK mode will give the loudest signal when the probe is directly over and crosswise to the cable path.

   The NULL mode will give a null in the signal (min. signal) when the probe handle is directly over the cable and increase on either side (the probe must be held perpendicular to the ground).

   The 45° mode is used to determine cable depth (see General Features).

LOCATING ENERGIZED CABLE USING 60 Hz

The transmitter is not required when 60 Hz is used because the current flowing thr the energized cable provides the signal for the detector.

1. Rotate the detector VOLUME control to its full counter-clockwise position.

2. Plug the headphones into the PHONES jack on the detector.

3. Screw the two section probe handle together and insert the connector into the PROBE receptacle (note keyway) until it locks in place. This automatically turns the detector ON.

4. Rotate the PEAK-NULL-45° switch to the desired position.

5. Place the toggle switch in the 60 Hz position.

6. Adjust the VOLUME control and slowly wave the probe back and forth a few inches above the ground to trace the cable's path.

   The PEAK mode will give the loudest signal when the probe is directly over and crosswise to the cable path.

   The NULL mode will give a null in the signal (min. signal) when the probe handle is directly over the cable and increase on either side (the probe must be held perpendicular to the ground).

   The 45° mode is used to determine cable depth (see General Features).

LOCATING DE-ENERGIZED, UNSHIELDED CABLE

1. Disconnect the cable at both ends.
2. Turn the transmitter switch OFF.
3. Connect one OUTPUT terminal to the conductor of the cable and the other terminal to a spike driven into the ground twenty to thirty feet to one side of the cable to be located (using the output cables provided). Turn the transmitter ON.
4. Rotate the detector VOLUME control to its full counter-clockwise position.
5. Plug the headphones into the PHONES jack on the detector.
6. Screw the two section probe handle together and insert the connector into the PROBE receptacle (note keyway) until it locks in place. This automatically turns the detector ON.
7. Rotate the PEAK-NULL-45° switch to the desired position.
8. Place the toggle switch in the TONE position.
9. Adjust the VOLUME control and slowly wave the probe back and forth a few inches above the ground to trace the cable's path.

   The PEAK mode will give the loudest signal when the probe is directly over and crosswise to the cable path.

   The NULL mode will give a null in the signal (min. signal) when the probe handle is directly over the cable and increase on either side (the probe must be held perpendicular to the ground).

   The 45° mode is used to determine cable depth (see General Features).

LOCATING PIPE

1. Disconnect the cable at both ends.
2. Turn the transmitter switch OFF.
3. Connect one OUTPUT terminal to the pipe and the other terminal to a spike driven into the ground twenty to thirty feet to one side of the cable to be located (using the output cables provided). Turn the transmitter ON.

4. Rotate the detector VOLUME control to its full counter-clockwise position.

5. Plug the headphones into the PHONES jack on the detector.

6. Screw the two section probe handle together and insert the connector into the PROBE receptacle (note keyway) until it locks in place. This automatically turns the detector ON.

7. Rotate the PEAK-NULL-45° switch to the desired position.

8. Place the toggle switch in the TONE position.

9. Adjust the VOLUME control and slowly wave the probe back and forth a few inches above the ground to trace the cable's path.

   The PEAK mode will give the loudest signal when the probe is directly over and crosswise to the cable path.

   The NULL mode will give a null in the signal (min. signal) when the probe handle is directly over the cable and increase on either side (the probe must be held perpendicular to the ground).

   The 45° mode is used to determine cable depth (see General Features).

MODEL 8700 - CABLE AND PIPE LOCATOR

REPLACEMENT PARTS LIST

DETECTOR SECTION

SYMBOL	PART NUMBER	DESCRIPTION
B	P16652	*Battery, 9 volt
C-501	P18913	Capacitor, ceramic disk, 4.7 mfd @ 10 V
C-502	P18312	Capacitor, ceramic disk, .1 mfd @ 10 V
C-503,505	P18416	Capacitor, electrolytic, 100 mfd @ 10 V
C-506	P15217	Capacitor, ceramic disk, .001 mfd @ 1 KV
C-507,504	P16360	Capacitor, ceramic disk, 100 pfd @ 1 KV
C-508	P15915	Capacitor, 500 pfd, 500 V
CONN-501	P18203	Connector, male, 5 pin w/gnd. (PROBE)
IC	P18315	Integrated circuit
J-501	P17193	Jack, phone (PHONES)
L-501	P17630	Choke, fixed; audio freq., 22uh ± 10%
Q-501	P18316	Transistor
R-501	P18415	Resistor, fixed; 47K ± 10%, ¼ watt
R-502	P18308	Resistor, Variable; 250K, ½ watt (VOLUME)
R-503,507	P18375	Resistor, fixed; 1K ± 10%, ¼ watt
R-504	P18372	Resistor, fixed; 2.7 meg ± 10%, ¼ watt
R-505	P18373	Resistor, fixed; 470K ± 10%, ¼ watt
R-506	P18374	Resistor, fixed; 100K ± 5%, ¼ watt
R-508	P18371	Resistor, fixed; 1 meg ± 10%, ¼ watt
R-509	P18926	Resistor, fixed; 10K ± 10%, ¼ watt
RECT-501,502	P14503	Rectifier
S-501	P18310	Switch, 2 pole, 2-5 position (PEAK, NULL, 4
S-502	P15588	Switch, SPDT (60 Hz/TONE)

TRANSMITTER SECTION

C-1,2	18429	Capacitor, ceramic disk, .05 mfd @ 50 V
C-3,4	18427	Capacitor, electrolytic, 1 mfd @ 50 V
C-5	18428	Capacitor, electrolytic, 150 mfd @ 35 V
C-6	P17466	Capacitor, ceramic, .47 @ 3 V
C-7	P18300	Capacitor, electrolytic, 100 mfd @ 50 V
Q-1,2	P17199	Transistor
Q-3,4	P16636	Transistor, power
R-1,5,9	P15911	Resistor, fixed; 1K ± 5%, ½ watt
R-2	P11165	Resistor, fixed, 8.2K ± 10%, ½ watt
R-3,11	P17540	Resistor, variable, 5K ± 30%, ¼ watt
R-4	P14871	Resistor, fixed; 6.8K ± 5%, ½ watt
R-6	P15230	Resistor, fixed; 10 Ohm ± 10%, ½ watt
R-7	P18430	Resistor, fixed; 3.9K ± 10%, ½ watt
R-8	P8465	Resistor, Fixed; 1.8 ohm ± 10%, ½ watt
R-10	P14216	Resistor, fixed; 33K ± 10%, ½ watt

MODEL 8700 - CABLE AND PIPE LOCATOR (Continued)

REPLACEMENT PARTS LIST (Continued)

TRANSMITTER SECTION (continued)

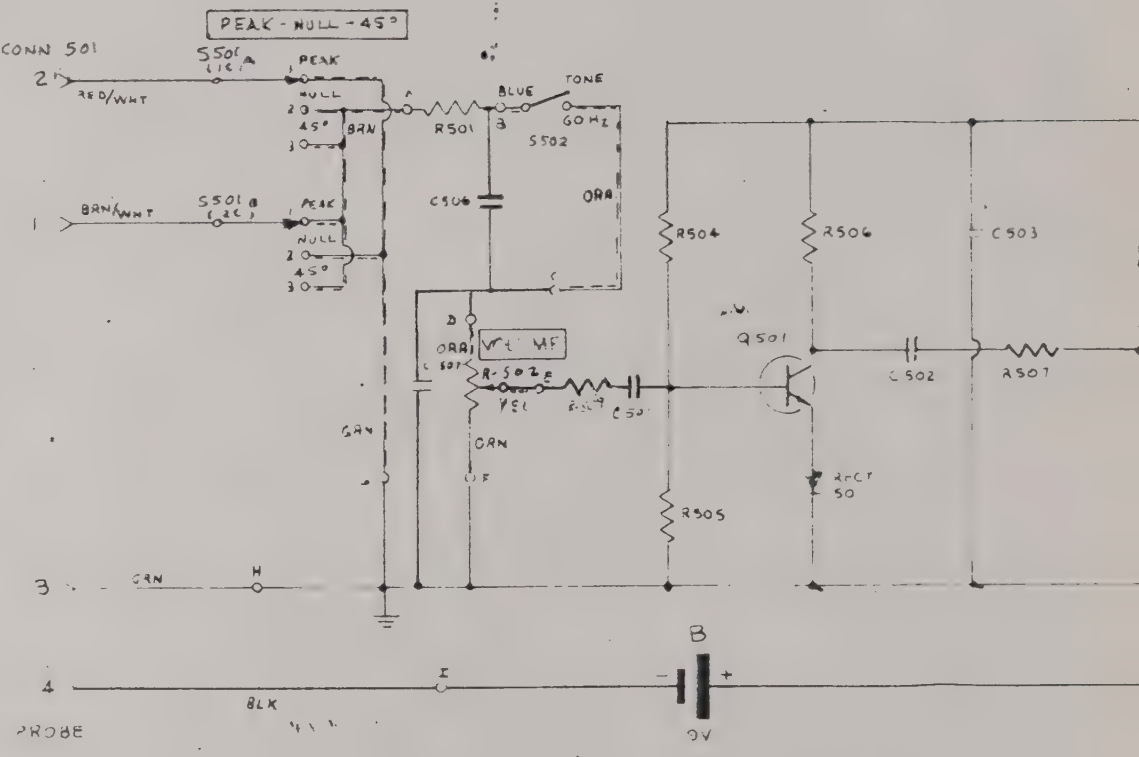
SYMBOL	PART NUMBER	DESCRIPTION
RECT-1	P14503	Rectifier
RY-1	P18431	Relay, 12V-6C, 130 ohm coil
S-1	P9690	Switch, toggle; SPST (ON/OFF)
SCR-1	P18311	Silicon controlled rectifier
T-1	P18432	Transformer, interstage
T-2	P18283	Transformer, output
TER-1,3,4	P11818	Termianl, red (BATTERY +,OUTPUT)
TER-2	P11817	Terminal, black (BATTERY -)

GENERAL

B-1,2	18209	Battery, 12 volt (PARALLEL)
	P16784	Case, carrying, leatherette
	15875	Cable assembly, black, 15 ft. (BATTERY)
	15876	Cable assembly, red, 15 ft. (BATTERY & OUTP
	18392	Ground rod
	P17885	Headphones
	18239	Handle assembly, probe
	19682	Probe; combination, Peak-Null-45°

+ BURGESS 2U6
EVEREADY 216
RCA VS 333
SEARS 57H6417

USED ON 8700-81



—— NO 26 STRANDED
ALL OTHER WIRE NO 22 STRANDED
REFERENCES IN RECTANGLES INDICATE OPERATING CONTROLS

ASSOCIATED RESEARCH, INC.
3758 WEST BELMONT AVENUE, CHICAGO, ILLINOIS 60618

SCHEMATIC WIRING DIAGRAM
MODEL 8700 DETECTOR

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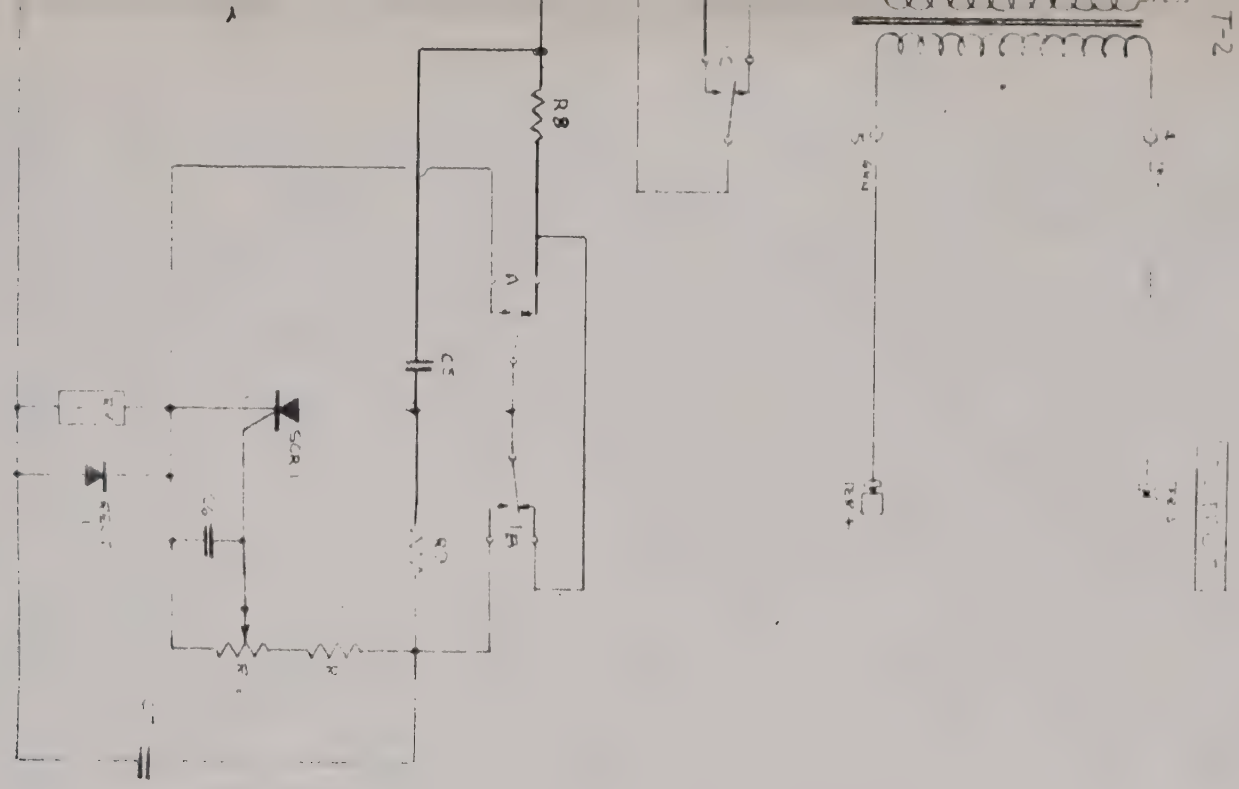

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ASSOCIATED RESEARCH, INC.
3758 WEST BELMONT AVENUE, CHICAGO, ILLINOIS 60618

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SCHEMATIC WIRING DIAGRAM
TRANSMITTER SECTION
MODEL 870 CABLE AND PIPE LOCATOR

DWN. DK APP
CKD SHT. 1 OF 2

DWG CWD A-

ALL WIRING - No 22 STRANDED

INDICATES P.C. BOARD "TAKE-OFF" POINTS

USED ON

8700-81

DWG-CWD A-111 73

UNIVERSITY
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OF TORONTO

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